**Thrills & Chills**

Chapter 3

Activity 9: Safety is Required but Thrills are Desired

Goals…

* Calculate the speed of the roller coaster at different positions using conservation of energy
* Calculate the acceleration of the roller coaster at turns
* Determine if the acceleration is below 4g for safety
* Determine if the speed at the top of a loop is sufficient for safety concerns
* Create sounds and scenery to enhance the thrills of the ride

Key Safety Issues

* No accelerations greater than Click here to enter text.
* Speed at Click here to enter text. must be greater than the speed required for Click here to enter text. with a centripetal acceleration of 1g
* Track and walls must be Click here to enter text. to support the weight of a roller coaster filled with passengers and to provide centripetal forces on curves
* Click here to enter text.provides acceleration of Click here to enter text.
* Roller coasters usually have accelerations less than 1g Click here to enter text.
* Ripping around a corner can be Click here to enter text. 1g
* To calculate acceleration toward the Click here to enter text. of a circle: ac = v2/R
* How could you lower the acceleration?
  + Click here to enter text.the velocity
  + Make the loop Click here to enter text.
* To calculate minimum speed required: a = v2/R or v = √aR
* To calculate centripetal force required: Fc = mv2/R
* Is it less than 4g?
* To calculate gravitational force(weight): w = mg

What did you learn?

* + Accelerations are never Click here to enter text. 4g
    - Curves & loops
    - Can you complete the loop?
  + Velocity can vary by Click here to enter text.- of the roller coaster
    - The Click here to enter text. the first hill, the Click here to enter text. it will have at the bottom